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AB The present invention provides multisignal labeling reagents and these are useful in a number of biochemical applications, including the

DRWN

LN.CNT 1182

1 Drawing Page(s)

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

manufacture of biomolecular probes and their use in detecting or amplifying analyte-specific moieties.

## CAS INDEXING IS AVAILABLE FOR THIS PATENT. ANSWER 2 OF 8 USPATFULL on STN L2ΑN 2009:288160 USPATFULL ΤI Multisignal Labeling Reagents, and Processes and Uses Therefor ΙN Rabbani, Elazar, New York, NY, UNITED STATES Stavrianopoulos, Jannis G., Bayshore, NY, UNITED STATES Donegan, James J., Long Beach, NY, UNITED STATES PΙ US 20090258374 A1 20091015 ΑI US 2009-399393 A1 20090306 (12) RLI Division of Ser. No. US 2003-407818, filed on 3 Apr 2003, Pat. No. US 7514551 DTUtility APPLICATION FS THE WEBB LAW FIRM, P.C., 700 KOPPERS BUILDING, 436 SEVENTH AVENUE, LREP PITTSBURGH, PA, 15219, US Number of Claims: 88 CLMN ECL Exemplary Claim: 1 DRWN 1 Drawing Page(s) LN.CNT 1395 CAS INDEXING IS AVAILABLE FOR THIS PATENT. The present invention provides multisignal labeling reagents and these are useful in a number of biochemical applications, including the manufacture of biomolecular probes and their use in detecting or amplifying analyte-specific moieties. CAS INDEXING IS AVAILABLE FOR THIS PATENT. ANSWER 3 OF 8 WPIDS COPYRIGHT 2011 THOMSON REUTERS on STN DUPLICATE L22004-727850 [200471] WPIDS ΑN 2009-P86761; 2010-Q65033 CR ΤI Composition of multi signal labeling reagents, useful for detecting or quantifying analyte in specimen, has oligomer/polymer having labeled moieties, reactive groups and charged groups linked to oligomer/polymer DC DONEGAN J J; RABBANI E; STAVRIANOPOULOS J G ΤN (DONE-I) DONEGAN J J; (ENZO-N) ENZO LIFE SCI INC; (RABB-I) RABBANI E; PA(STAV-I) STAVRIANOPOULOS J G CYC PIA US 20040198971 A1 20041007 (200471)\* EN 20[1] A1 20041003 (200471) EN CA 2461445 JA JP 2004309486 A 20041104 (200472) 29 EP 1489422 A2 20041222 (200501) ΕN A 20080703 (200845) JP 2008148709 JΑ 2.2 US 7514551 B2 20090407 (200925) EN B2 20100317 (201020) JP 4434819 JΑ 26 EP 1489422 A3 20100908 (201059) ENADT US 20040198971 A1 US 2003-407818 20030403; US 7514551 B2 US 2003-407818 20030403; CA 2461445 A1 CA 2004-2461445 20040319; JP 2004309486 A JP 2004-110340 20040402; JP 2008148709 A Div Ex JP 2004-110340 20040402; JP 4434819 B2 JP 2004-110340 20040402; EP 1489422 A2 EP 2004-8226 20040405; JP 2008148709 A JP 2008-5049 20080111; EP 1489422 A3 EP 2004-8226 20040405 FDT JP 4434819 B2 Previous Publ JP 2004309486 A PRAI US 2003-407818 20030403 AN 2004-727850 [200471] WPIDS

CR

ΔR

2009-P86761; 2010-Q65033

US 20040198971 A1 UPAB: 20050707

NOVELTY - A composition (I) of matter comprising an oligomer or polymer having two or more labeled groups, where the label or labels are chemically linked to the oligomer or polymer, one or more reactive groups, and one or more charged groups where the charged groups are covalently linked to the oligomer or polymer or comprise part of the backbone of the oligomer or polymer, or any of their combination, is new.

DETAILED DESCRIPTION - A composition (I) of matter comprises

- (a) an oligomer or polymer comprising two or more labeled moieties, where the label or labels are chemically linked to the oligomer or polymer, one or more reactive groups, and one or more charged groups where the charged groups are covalently linked to the oligomer or polymer or comprise part of the backbone of the oligomer or polymer, or any of their combination;
- (b) a nucleic acid strand or a complex of two or more nucleic acid strands, where the strand or complex comprises one or more reactive groups and two or more labeled nucleotides or labeled nucleotide analogs;
- (c) a nucleic acid strand or a complex of two or more nucleic acid strands, where the strand or complex comprises two or more labeled nucleotides or labeled nucleotide analogs, and one or more binding partners different from the labels;
  - (d) a compound having the formula (F1); or
  - (e) a compound having the formula (F2).

In formula (F1),

Q = a non-inherent charged group;

n = 1 or greater;

D = label;

m = 2 or greater;

R = one or more reactive group; and

P = oligomer or polymer.

In formula (F2),

D = label;

m = 2 or greater;

R = one or more reactive group; and

 ${\sf P}={\sf synthetic}$  or chimeric oligomer or polymer, D or one or more of monomeric units of P has one or more charged groups.

INDEPENDENT CLAIMS are also included for the following:

- (1) a composition (II) comprising a target molecule that has been labeled using (I); and
- (2) a composition (III) prepared by a target labeling process comprising (i) providing a target for labeling, and a labeling reagent having the formula (F1) or (F2), (ii) reacting the target and the labeling reagent to form the composition having the formula (F3) or (F4).
- ${\tt L} = {\tt linkage}$  or linker between the oligomer or polymer and the target.
- USE (Ic) is useful for labeling a target molecule, which involves attaching or binding (Ic), to the target molecule chosen from peptides, proteins, antibodies, enzymes, enzyme substrates, ligands, hormones, receptors, antigens, haptens, lectins, avidin, streptavidin, toxins, carbohydrates, oligosaccharides, polysaccharides, ribonucleotides, deoxyribonucleotides, dideoxyribonucleotides, analogs of deoxynucleotides, ribonucleotides and dideoxynucleotides, modified deoxynucleotides, modified ribonucleotides, modified dideoxynucleotides, oligonucleotides and polynucleotides. (Ic) is useful for detecting or quantifying an analyte in a specimen, which involves:
- (a) providing a specimen where an analyte is sought to be detected or quantified, (Ic) comprising a first non-hybridizing binding partner and an analyte specific moiety that comprises a second non-hybridizing binding partner, where the first and second binding partner comprises a binding pair;
  - (b) binding the analyte specific moiety to any analytes that may be

present in the specimen;

US 2001-302051P

US 2001-279763P

PRAI

- (c) binding the composition to any bound analyte specific moieties from step (b) through interactions between the first binding partners and the second binding partners; and
- (d) measuring signal generation and thus detecting the presence or quantity of the analyte.

The first and the second binding partners are paired members chosen from biotin/avidin, biotin/streptavidin, antigen/antibody, hormone/hormone receptor, lectin/sugar, enzyme/enzyme substrate, enzyme/substrate analog, enzyme/enzyme inhibitor, co-factor/co-factor enzyme binding site, and chelator/chelate. The analyte specific moiety comprises an antibody or an antigen. The method further involves providing one or more unlabeled nucleic acids. The unlabeled nucleic acid comprises some or all of the sequences of the nucleic acid portion in (Ic). (Ic) is also useful for detecting or quantifying an analyte in a specimen, which involves (a) providing a specimen where an analyte is sought to be detected or quantified, (Ic) comprising a first non-hybridizing binding partner a linking moiety comprising a second non-hybridizing binding partner and a third non-hybridizing binding partner, an analyte specific moiety that comprises a fourth non-hybridizing binding partner, where the first and the second binding partner comprise a first binding pair, and the third and the fourth binding partner comprises a second binding pair, performing or carrying out at least one binding reaction by binding the analyte specific moiety to any analytes that may be present in the specimen, binding the third binding partner to the fourth binding partner, binding the first binding partner to the second binding partner, to form a complex that comprises the analyte, the analyte specific moiety, the linking moiety and (Ic), and detecting or quantifying the amount of signal generation in the complex. The step of performing or carrying out the binding reactions is performed or carried out sequentially or concomitantly. In the providing step, the first binding pair and the second binding pair comprise the same pair of binding partners. The analyte specific moiety comprises an antibody or an antigen. (II) or (III) is useful for detecting or quantifying an analyte, which involves providing (II) or (III), where the target is an analyte specific moiety, contacting the (II) or (III) with a specimen suspected of containing the analyte, and measuring the amount of (II) or (III) bound to analytes in the specimen to detect or quantify the analyte (all claimed).

ADVANTAGE - (I) detects or quantifies analyte with high sensitivity. In (I), the multiple labeled groups increases the amount of signal that is added to the analyte specific moiety, the presence of reactive groups enables attachment of the multiple labeled groups to a desirable target and the presence of charged group increases solubility.

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ANSWER 4 OF 8 USPATFULL on STN
L2
       2003:237907 USPATFULL
ΑN
TΙ
       Compositions and methods for the therapy and diagnosis of colon cancer
       King, Gordon E., Shoreline, WA, UNITED STATES
ΙN
       Meagher, Madeleine Joy, Seattle, WA, UNITED STATES
       Xu, Jiangchun, Bellevue, WA, UNITED STATES
       Secrist, Heather, Seattle, WA, UNITED STATES
       Jiang, Yuqiu, Kent, WA, UNITED STATES
       Corixa Corporation, Seattle, WA, UNITED STATES, 98104 (U.S. corporation)
PA
PΙ
       US 20030166064
                           A1 20030904
ΑI
       US 2002-99926
                               20020314 (10)
                           A1
RLI
       Continuation-in-part of Ser. No. US 2001-33528, filed on 26 Dec 2001,
       PENDING Continuation-in-part of Ser. No. US 2001-920300, filed on 31 Jul
       2001, PENDING
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20010629 (60)

20010328 (60)

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US 2000-223283P 20000803 (60)
       Utility
DT
FS
       APPLICATION
       SEED INTELLECTUAL PROPERTY LAW GROUP PLLC, 701 FIFTH AVE, SUITE 6300,
LREP
       SEATTLE, WA, 98104-7092
       Number of Claims: 17
CLMN
ECL
       Exemplary Claim: 1
DRWN
      No Drawings
LN.CNT 8531
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
       Compositions and methods for the therapy and diagnosis of cancer,
       particularly colon cancer, are disclosed. Illustrative compositions
       comprise one or more colon tumor polypeptides, immunogenic portions
       thereof, polynucleotides that encode such polypeptides, antigen
       presenting cell that expresses such polypeptides, and T cells that are
       specific for cells expressing such polypeptides. The disclosed
       compositions are useful, for example, in the diagnosis, prevention
       and/or treatment of diseases, particularly colon cancer.
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 5 OF 8 USPATFULL on STN
L2
       2003:106233 USPATFULL
ΑN
ΤI
       Compositions and methods for the therapy and diagnosis of pancreatic
       Benson, Darin R., Seattle, WA, UNITED STATES
ΙN
       Kalos, Michael D., Seattle, WA, UNITED STATES
       Lodes, Michael J., Seattle, WA, UNITED STATES
       Persing, David H., Redmond, WA, UNITED STATES
       Hepler, William T., Seattle, WA, UNITED STATES
       Jiang, Yuqiu, Kent, WA, UNITED STATES
       Corixa Corporation, Seattle, WA, UNITED STATES, 98104 (U.S. corporation)
PA
PΙ
       US 20030073144
                          A1 20030417
       US 2002-60036
                           A1 20020130 (10)
AΙ
PRAI
       US 2001-333626P
                               20011127 (60)
       US 2001-305484P
                               20010712 (60)
       US 2001-265305P
                               20010130 (60)
       US 2001-267568P
                               20010209 (60)
       US 2001-313999P
                               20010820 (60)
       US 2001-291631P
                               20010516 (60)
       US 2001-287112P
                               20010428 (60)
       US 2001-278651P
                               20010321 (60)
       US 2001-265682P
                               20010131 (60)
DT
      Utility
      APPLICATION
FS
       SEED INTELLECTUAL PROPERTY LAW GROUP PLLC, 701 FIFTH AVE, SUITE 6300,
LREP
       SEATTLE, WA, 98104-7092
      Number of Claims: 17
CLMN
ECL
       Exemplary Claim: 1
DRWN
      No Drawings
LN.CNT 14253
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AΒ
       Compositions and methods for the therapy and diagnosis of cancer,
       particularly pancreatic cancer, are disclosed. Illustrative compositions
       comprise one or more pancreatic tumor polypeptides, immunogenic portions
       thereof, polynucleotides that encode such polypeptides, antigen
       presenting cell that expresses such polypeptides, and T cells that are
       specific for cells expressing such polypeptides. The disclosed
       compositions are useful, for example, in the diagnosis, prevention
       and/or treatment of diseases, particularly pancreatic cancer.
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CAS INDEXING IS AVAILABLE FOR THIS PATENT.
L2
     ANSWER 6 OF 8 USPATFULL on STN
       2003:209861 USPATFULL
ΑN
ΤТ
       HLA class I A2 tumor associated antigen peptides and vaccine
       compositions
ΙN
       Fikes, John D., San Diego, CA, United States
       Sette, Alessandro, La Jolla, CA, United States
       Sidney, John, San Diego, CA, United States
       Southwood, Scott, Santee, CA, United States
       Celis, Esteban, Rochester, MN, United States
       Keogh, Elissa A., San Diego, CA, United States
       Chesnut, Robert, Cardiff-by-the-Sea, CA, United States
PA
       Epimmune Inc., San Diego, CA, United States (U.S. corporation)
PΙ
       US 6602510
                           B1 20030805
ΑI
       US 2000-543608
                               20000405 (9)
       Utility
DT
       GRANTED
FS
EXNAM Primary Examiner: Schwadron, Ronald B.
       Sterne, Kessler, Goldstein & Fox P.L.L.C.
LREP
       Number of Claims: 11
CLMN
ECL
       Exemplary Claim: 1
DRWN
       5 Drawing Figure(s); 5 Drawing Page(s)
LN.CNT 3397
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
       A composition or vaccine composition comprising eight isolated epitopes
       consisting of YLSGANLNV (SEQ. ID. NO: 1), IMIGVLVGV (SEQ. ID. NO: 2),
       KLBPVQLWV (SEQ. ID. NO: 3), SMPPPGTRV (SEQ. ID. NO: 4), KVAELVHFL (SEQ.
       ID. NO: 5), YLQLVFGIEV (SEQ. ID. NO: 6), RLLQETELV (SEQ. ID. NO: 7),
       and, VVLGVVFGI (SEQ. ID. NO: 8).
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 7 OF 8 USPATFULL on STN
L2
ΑN
       2002:272801 USPATFULL
ΤI
       Compositions and methods for the therapy and diagnosis of colon cancer
TN
       Stolk, John A., Bothell, WA, UNITED STATES
       Xu, Jiangchun, Bellevue, WA, UNITED STATES
       Chenault, Ruth A., Seattle, WA, UNITED STATES
       Meagher, Madeleine Joy, Seattle, WA, UNITED STATES
PA
       Corixa Corporation, Seattle, WA, UNITED STATES, 98104 (U.S. corporation)
PΙ
       US 20020150922
                           A1 20021017
ΑI
       US 2001-998598
                           A1 20011116 (9)
PRAI
       US 2001-304037P
                               20010710 (60)
       US 2001-279670P
                               20010328 (60)
       US 2001-267011P
                               20010206 (60)
       US 2000-252222P
                               20001120 (60)
       Utility
DT
FS
       APPLICATION
       SEED INTELLECTUAL PROPERTY LAW GROUP PLLC, 701 FIFTH AVE, SUITE 6300,
LREP
       SEATTLE, WA, 98104-7092
CLMN
       Number of Claims: 17
ECL
       Exemplary Claim: 1
DRWN
       No Drawings
LN.CNT 9233
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AΒ
       Compositions and methods for the therapy and diagnosis of cancer,
       particularly colon cancer, are disclosed. Illustrative compositions
       comprise one or more colon tumor polypeptides, immunogenic portions
       thereof, polynucleotides that encode such polypeptides, antigen
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presenting cell that expresses such polypeptides, and T cells that are

specific for cells expressing such polypeptides. The disclosed compositions are useful, for example, in the diagnosis, prevention and/or treatment of diseases, particularly colon cancer.

## CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ANSWER 8 OF 8 USPATFULL on STN L22002:243051 USPATFULL ΑN Compositions and methods for the therapy and diagnosis of ovarian cancer ΤI ΙN Algate, Paul A., Issaguah, WA, UNITED STATES Jones, Robert, Seattle, WA, UNITED STATES Harlocker, Susan L., Seattle, WA, UNITED STATES PACorixa Corporation, Seattle, WA, UNITED STATES, 98104 (U.S. corporation) A1 20020919 PΙ US 20020132237 ΑI US 2001-867701 A1 20010529 (9) PRAI US 2000-207484P 20000526 (60) Utility DT FS APPLICATION LREP SEED INTELLECTUAL PROPERTY LAW GROUP PLLC, 701 FIFTH AVE, SUITE 6300, SEATTLE, WA, 98104-7092 CLMN Number of Claims: 11 ECL Exemplary Claim: 1 DRWN No Drawings LN.CNT 25718 CAS INDEXING IS AVAILABLE FOR THIS PATENT. Compositions and methods for the therapy and diagnosis of cancer, particularly ovarian cancer, are disclosed. Illustrative compositions comprise one or more ovarian tumor polypeptides, immunogenic portions

thereof, polynucleotides that encode such polypeptides, antigen presenting cell that expresses such polypeptides, and T cells that are specific for cells expressing such polypeptides. The disclosed compositions are useful, for example, in the diagnosis, prevention

and/or treatment of diseases, particularly ovarian cancer.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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